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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/822,700	04/13/2004	Naoto Matsunami	500.43772X00	2922

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MATTINGLY, STANGER, MALUR & BRUNDIDGE, P.C.
1800 DIAGONAL ROAD
SUITE 370
ALEXANDRIA, VA 22314

EXAMINER
DOAN, DUC T

ART UNIT	PAPER NUMBER
2188	

DATE MAILED: 10/20/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

PTO-90C (Rev. 10/03)

	Application No.	Applicant(s)
Office Action Summary	10/822,700	MATSUNAMI ET AL.
	Examiner	Art Unit	
	Duc T. Doan	2188	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE <u>3</u> MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.
- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1) ☒ Responsive to communication(s) filed on <u>05 September 2006</u>.
2a) ☒ This action is **FINAL**.   2b) ☐ This action is non-final.
3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4) ☒ Claim(s) <u>1-4, 6-12 and 14-20</u> is/are pending in the application.
   4a) Of the above claim(s) _____ is/are withdrawn from consideration.
5) ☐ Claim(s) _____ is/are allowed.
6) ☒ Claim(s) <u>1-4, 6-12 and 14-20</u> is/are rejected.
7) ☐ Claim(s) _____ is/are objected to.
8) ☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9) ☐ The specification is objected to by the Examiner.
10) ☐ The drawing(s) filed on _____ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
   Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
   Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
   a) ☐ All   b) ☐ Some * c) ☐ None of:
     1. ☐ Certified copies of the priority documents have been received.
     2. ☐ Certified copies of the priority documents have been received in Application No. _____.
     3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
   * See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)
1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date <u>6/7/06 9/5/06</u>.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____.
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

DETAILED ACTION

Status of Claims

Claims 1-20 have been presented for examination in this application. In response to the

last office action, claims 1-4,6-12,14-20 have been amended, claims 5,13 have been canceled. As

the result, claims 1-4,6-12,14-20 are now pending in this application.

Claims 1-4,6-12,14-20 are rejected.

Applicant's arguments filed 9/5/06 have been fully considered but they are mooted in

view of new ground(s) of rejection necessitated by the Applicant's amendments to the claims.

All rejections and objections not explicitly repeated below are withdrawn.

Specifications

The disclosure is objected to because of the following informalities:

Specification page 36, line 4 phrase "low-cost AA disk" should be changed to "low-cost ATA

disks". Appropriate correction is required.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all

obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in

section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are

such that the subject matter as a whole would have been obvious at the time the invention was made to a person

having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the

manner in which the invention was made.

Claims 1-4,6,12,17-18 rejected under 35 U.S.C. 103(a) as being unpatentable over

Oliveira et al (US 6766359) in view of Guthrie (US 2005/0010592).

As in claim 1, Oliveira discloses a first storage system (Fig 2: #32, #34, #36, #18 in first

column corresponds to the first storage system) connected to a computer (Fig 2: #12 host

processor) and a second storage system (Fig 2: #32, #34, #36, #18 in second column corresponds

to the second storage system), comprising: a first storage device configured to a first file system

transfer (Fig 2: #18 storage device in first column, column 7 lines 17 discloses configuring

logical volumes to transfer files/data from source/master disks to destination/secondary disks, see

column 7 lines 35-40); a first controller for controlling said first storage system (Fig 2: #30,#32

channel adaptor, channel director in first column); and a second controller for controlling

input/output operations to/from said second storage system (Fig 2: #30,#32 channel adaptor,

channel director in second column, controlling input/output operations to/from second storage

system), said second storage system having a third controller and a second storage device,

configured to a second file system, connected to said third controller (Fig 2: #34,#36 disk

adaptor, disk director in second column, corresponding to the claim's third controller),

The claim further recites wherein said first controller mounts a root directory of said

second file system at a mount point in said first file system such that said first and second file

systems are provided to said computer as a single directory tree. Oliveira column 3 lines 25-42

disclose searching and selecting paths to transfer data from a source to the destination shared

storage region. Olive does not expressly disclose the files systems in the same directory tree.

However, Guthrie discloses a snapshot of file system (Guthrie's Fig 7) method in which the

snapshot file systems (Guthrie's Fig 7: #702) and the file system it is snapped from (Guthrie's Fig 7: #701) both are under the same directory root (Guthrie's Fig 7: #700; mounting file systems #701 #702 #703). It would have been obvious to one of ordinary skill in the art at the time of invention to include the snapshot method as suggested by Guthrie thereby quickly and dynamically keep track of nodes being replaced by traverse the directory tree, see Guthrie's paragraph 17).

As in claim 2, the claim recites wherein said second controller manages logical units created in said second storage device as a RAID group possessed by said first storage system, and wherein said first controller creates a file system in said second storage device using said RAID group (Oliveira's Fig 13 discloses managing logical/physical storage units, wherein the storage unit comprises multiple disk array groups, see Oliveira's column 6 lines 14-16).

As in claim 3, wherein said first controller is responsive to an access request for a file received from said computer for identifying that a file system in which said file is stored has been created in said second storage, and accesses a file stored in said second storage through said second controller (Guthrie's paragraph 16 lines 23-31, the node and their ancestor nodes are replaced and copied subsequently, see Fig 9. The data whether associating with current node or snapshot nodes can be easily determined by traversing the directory, see paragraph 26).

As in claim 4, the claim recites second controller is connected to a plurality of second storage systems (Oliveira's Fig 2 shows #32 in second column, connects to many storage systems #18 in second column and third column).

As in claim 6, the claim recites wherein said first controller copies data in the first file system in the first file system in said first storage device into said second storage device while

maintaining the structure of said second file system (Guthrie's Fig 13, column 17 lines 33-55,

column 17 line 61 to column 18 line 4 discloses transferred data using the file system logical

volume manager, which maps host's data request transparently to structures in physical storages

devices).

Claim 12 rejected based on the same rationale as of claim 1.

Claim 17 rejected based on the same rationale as of claim 1.

Claim 18 rejected based on the same rationale as of claim 6.

Claims 7-11,14-16,19-20 rejected under 35 U.S.C. 103(a) as being unpatentable over

Oliveira et al (US 6766359), Guthrie (US 2005/0010592) as applied to claims 6,12 and 18

respectively and in view of Becker-Szendy et al (US 2005/0114291).

As in claim 7, the claim recites wherein said first controller copies the data in the first file

system in said first storage device into said second storage device, and thereafter erases the data

in the first file system in said first storage. Oliveria and Guthrie do not expressly discloses the

claim's erasing data in the first file system. However, Becker-Szendy discloses a method to

migrate data from a local file system to another server, after the migration, another server will

serve the data (Becker-Szendy 's paragraph 77 lines 15-18), the source data is readily to be

deleted by using the "to be deleted flag" and "delete" flags (Becker-Szendy's paragraph 72). . It

would have been obvious to one of ordinary skill in the art at the time of invention to include the

migration method and data structures including flags as suggested by Becker-Szendy thereby the

data can be deleted in a consistency manner, see Becker-Szendy's paragraph 72).

As in claim 8, the claim recites wherein said first controller or said second controller adds an attribute indicative of prohibition of a write access from said computer to the first file system when the data in the file system in said first storage device is copied into said second storage device (Becker-Szendy's paragraph 83 discloses for consistency the local file system, (corresponding to the claim's first file system) will not be allowed for access. The access modification permission is set by administrator and tracking by the virtual metadata server; paragraph 84).

As in claim 9, the claim recites wherein said first storage system is connected to a management device, such that said first controller copies the data in the first file system in said first storage device into said second storage device, and adds the attribute based on an instruction from said management device (Becker-Szendy's paragraph 28 discloses the virtual server manages/provides attributes for object (files/directories) being migrated for example, time created, time last modified, owner identity).

As in claim 10, the claim recites wherein said management device sets a time at which a new file system is configured in said first storage device, wherein said first controller creates a new file system in said first storage device upon arrival of said time, and wherein said first controller stores data written from said computer in said new file system, and moves a file system in said first storage device which has stored data written from said computer before said time into said second storage device. The claim rejected based on the same rationale as of claim 9. Guthrie 's Fig 7 shows a snapshot file system #702 is created, subsequently "snapshot" data of files to be backed up is saved in file system #702, #703. Data saved in #703 is subsequently

backed up/moved to a second storage device in a "copy on write" manner (Guthrie's paragraph

16).

As in claim 11, the claim recites a management table wherein said storage system

manages the structure of a file system using said management table (Oliveira column 8 lines 25-

35 discloses tables being used by the first storage system (Oliveira's Fig 2: #34, #36 in first

column) to manages data structures of a file system being transferred).

Claim 14 rejected based on the same rationale as of claims 3,6,7.

Claims 15 rejected based on the same rationale as of claim 8.

Claim 16 rejected based on the same rationale as of claim 10.

Claim 19 rejected based on the same rationale as of claim 7.

Claim 20 rejected based on the same rationale as of claim 8.

Conclusion

Applicant's amendment necessitated the new ground(s) of rejection presented in this

Office action. Accordingly, **THIS ACTION IS MADE FINAL.** See MPEP 706.07(a).

Applicant is reminded of the extension of time policy as set forth in 36 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE

MONTHS from the mailing date of this action. In the event a first reply is filed within TWO

MONTHS of the mailing date of this final action and the advisory action is not mailed until after

the end of the THREE-MONTH shortened statutory period, then the shortened statutory period

will expire on the date the advisory action is mailed, and any extension fee pursuant to 37

CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event,

however, will the statutory period for reply expire later than SIX MONTHS from the mailing

date of this final action.

When responding to the office action, Applicant is advised to provide the examiner with

the line numbers and page numbers in the application and/or references cited to assist examiner

to locate the appropriate paragraphs.

Any inquiry concerning this communication or earlier communications from the

examiner should be directed to Duc T. Doan whose telephone number is 571-272-4171. The

examiner can normally be reached on M-F 8:00 AM 05:00 PM.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's

supervisor, Mano Padmanabhan can be reached on 571-272-4210. The fax phone number for the

organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent

Application Information Retrieval (PAIR) system. Status information for published applications

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applications is available through Private PAIR only. For more information about the PAIR

system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR

system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

MANO PADMANABHAN
SUPERVISORY PATENT EXAMINEI